What is claimed is:

1. A piezo-electric film element comprising:
a substrate;

a first electrode formed on said substrate;

a dielectric film formed on said first electrode, said dielectric film including a piezo-electric layer and including a stress-reducing layer for reducing a stress between said substrate and said dielectric film; and

a second electrode formed on said dielectric film.

2. The piezo-electric film element of claim 1, wherein said stress-reducing layer is electrically insulated from said first electrode and said second electrode, and a Young's modulus of said stress-reducing layer is smaller than a Young's modulus of said piezo-electric layer.

3. The piezo-electric film element of claim 1, wherein said piezo-electric layer comprises an oxide solid-solution having a perovskite structure expressed by a chemical formula ABO_3, including at least one A element selected from a group consisting of Pb, Ba, Nb, La, Li, Sr, Bi, Na and K, and including at least one B element selected from a group consisting of Cd, Fe, Ti, Ta, Mg, Mo, Ni, Nb, Zr, Zn, W and Yb.

4. The piezo-electric film element of claim 1, wherein said piezo-electric layer comprises a PZT film expressed by a formula: $Pb_{1+x}(Zr_y+Ti_{1-y})O_3$ (x=0~0.5).

5. The piezo-electric film element of claim 1, wherein said stress-reducing layer comprises a metal material or an oxide of said metal material, said metal material comprising at least one of the platinum group of precious metals.

6. The piezo-electric film element of claim 1, wherein a heat expansion coefficient of said stress-reducing layer is different than a heat expansion coefficient of said piezoelectric layer.

7. The piezo-electric film element of claim 6, wherein each of said piezo-electric layer and

said stress depressing layer comprises an oxide solid-solution having a perovskite structure expressed by a chemical formula ABO_3, including at least one A element selected from a group consisting of Pb, Ba, Nb, La, Li, Sr, Bi, Na and K, and including at least one B element selected from a group consisting of Cd, Fe, Ti, Ta, Mg, Mo, Ni, Nb, Zr, Zn, W and Yb.

8. The piezo-electric film element of claim 7, wherein said piezo-electric layer comprises a PZT film expressed by a formula: $Pb_{1+x}(Zr_y+Ti_{1-y})O_3$ (x=0~0.5, y=0.5-0.6), and said stress-reducing layer comprises a PZT film expressed by a formula: $Pb_{1+x}(Zr_y+Ti_{1-y})O_3$ (x=0~0.5, y=0.1-0.3).

9. An actuator comprising:
said piezo-electric film element of claim 1; and
a vibration plate formed adjacent to said piezo-electric film element.

10. An ink-jet head comprising:
a plurality of actuators, each of said actuators comprising said actuator of claim 9;
a plurality of pressure chambers corresponding to said plurality of actuators; and
a plurality of nozzles corresponding to said plurality of pressure chambers, said plurality of nozzles being operable to eject ink droplets.

11. An ink-jet recording apparatus comprising:
said ink-jet head of claim 10;
a controller for controlling said ink-jet head; and
an ink receiver for supplying ink to said ink-jet head.

12. A piezo-electric film element comprising:
a substrate;
a first electrode formed on said substrate;
a dielectric film formed on said first electrode; and
a second electrode formed on said dielectric thin film;

wherein said substrate comprises one of a first substrate having a heat expansion coefficient of $20\sim40\times10^{-7}(K^{-1})$ and a second substrate having a heat expansion coefficient of $60\sim150\times10^{-7}(K^{-1})$; and

wherein if said substrate comprises said first substrate, said dielectric film comprises a first dielectric film having a composition expressed by a formula: $Pb_{1+x}(Zr_y+Ti_{1-y})0_3$ (x=0-0.5, y=0.4-0.5), and if said substrate comprises said second substrate, said dielectric film comprises a second dielectric film having a composition expressed by a formula: $Pb_{1+x}(Zr_y+Ti_{1-y})0_3$ (x=0-0.5, $0.5<y\leq0.7$).

13. A piezo-electric film element comprising:

a substrate having a heat expansion coefficient;

a first electrode formed on said substrate;

a dielectric film formed on said first electrode, said dielectric film comprising a tetragonal structure of an oxide having a perovskite structure, and said dielectric film having heat expansion coefficient; and

a second electrode formed on said dielectric film;

wherein if said heat expansion coefficient of said dielectric film divided by said heat expansion coefficient of said substrate is in a range of 0.3 to 0.7, a c-axis oriented rate of said dielectric film is in a range of 10% to 40%, and if said heat expansion coefficient of said dielectric film divided by said heat expansion coefficient of said substrate is in a range of 1.0 to 2.5, a c-axis oriented rate of said dielectric film is in a range of 60% to 100%.

14. A piezo-electric film element comprising:

a substrate;

a first electrode formed on said substrate;

a dielectric film formed on said first electrode, said dielectric film having a composition expressed by a formula: $Pb_{1+x}(Zr_y+Ti_{1-y})0_3$ (x=0-0.5) and having a tetragonal structure; and

a second electrode formed on said dielectric film;

wherein said substrate comprises one of a first substrate having a heat expansion

coefficient of $20\sim40\times10^{-7}(K^{-1})$ and a second substrate having a heat expansion coefficient of $60\sim150\times10^{-7}(K^{-1})$; and

wherein if said substrate comprises said first substrate, said dielectric film comprises a first dielectric film having a composition expressed by a formula: $Pb_{1+x}(Zr_y+Ti_{1-y})0_3$ (x=0-0.5, y=0.4-0.5), and if said substrate comprises said second substrate, said dielectric film comprises a second dielectric film having a composition expressed by a formula: $Pb_{1+x}(Zr_y+Ti_{1-y})0_3$ (x=0-0.5, $0.5<y\leq0.7$).